
Supplemental Filing

**Supplement II in Response to Data Requests
1 through 104 and April 25 Workshop Queries**

In support of the

**Application for Certification
for the**

Walnut Creek Energy Park

City of Industry, California
(05-AFC-02)

Submitted to the:
California Energy Commission

Submitted by:
Walnut Creek Energy, LLC
A wholly owned subsidiary of



With Technical Assistance by:



Sacramento, California
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Introduction

The following are Walnut Creek Energy, LLC's (WCE's), second supplemental responses to Data Requests for the Walnut Creek Energy Park (05-AFC-02). The CEC Staff served these data requests as part of the discovery process for the WCEP project. WCE has provided written Data Request Responses to all of the data requests issued on March 10, 2006. In some cases, however, full responses were deferred for additional time. In addition, Staff asked for additional information during the Data Request Response Workshop held on April 25, 2006, relating to some data requests or topic areas, and Staff has issued a second round of data requests, dated June 21, 2006. This document provides additional information in response to the informal requests made at the workshop and the second round of Data Requests. If information is provided in response to a specific Data Request, the response is keyed to a Data Request number. If the information is provided in response to a workshop query, the response is numbered sequentially with a "WSQ" prefix.

The responses are grouped by individual discipline or topic area. Within each discipline area, the responses are presented in the same order as CEC Staff presented them and are keyed to the Data Request numbers. New or revised graphics or tables are numbered in reference to the Data Request number. For example, the first table used in response to Data Request #15 would be numbered Table DR15-1. The first figure used in response to Data Request #28 would be Figure DR28-1, and so on. Other supporting information in response to a data request (supporting data, stand-alone documents such as plans) is found at the end of a discipline-specific section as numbered attachments. These additional pieces of information are not sequentially page-numbered consistently with the remainder of the document, but may have their own internal page numbering system.

Air Quality

Air Quality

Fine Particulate Matter (PM_{2.5}) Mitigation

DR6. *Please provide proposal(s) to mitigate the facility's potentially significant PM_{2.5} impacts.*

Response: WCE has requested information regarding particulate matter (PM) credits in the Priority Reserve from the South Coast Air Quality Management District (SCAQMD) and will provide this information and further analysis of PM mitigation in a future submittal.

Cumulative Impacts Analysis

DR29. *Please clarify whether an air quality cumulative impact analysis has been performed. If it has, please provide the modeling assumptions, model input and output files, and modeling results.*

DR30. *If a cumulative impact analysis has not been performed, please discuss the status of efforts to obtain a list of projects near the WCEP project site that meet the criteria listed in Section 8.1H, Cumulative Impacts Analysis Protocol. If the aforementioned list has been obtained, please submit the list of the emission sources to be included in the cumulative air quality impacts analysis. Upon staff's review of and concurrence with the sources identified, please perform a cumulative impact analysis according to the modeling protocol in the AFC.*

Response: The SCAQMD provided a list of emission sources that was submitted in response to this data request in a previous submittal as Attachment AIR-4. This list did not contain emissions data, however. The SCAQMD has provided a second list that includes emissions data, and this list of emission sources and data is included here as Attachment AIR-5. Not all of the sources in this list are appropriate for use in the cumulative impacts analysis. The cumulative impacts analysis will be conducted after discussions with CEC Staff leads to agreement between Staff and the Applicant regarding the sources to be used in the analysis.

Emergency Generator

WSQ-8. *Please explain how the emergency generator was modeled in the air quality analysis.*

Response: The criteria pollutant modeling incorporated the turbines, cooling tower, fire pump, and emergency generator. The health risk assessment did not include the emergency generator, and no permit application was filed for the emergency generator. The emergency generator was included in the criteria pollutant modeling as a conservative measure, to model the worst-case potential impacts.

Attachment AIR-5

Cumulative Impacts Analysis Sources

SCAQMD Emissions and Application Information within Requested Zipcode Areas

Fac ID	SIC Codes	Facility Name	Location Address (Equipment may not lie in the displayed zip code if the address contains "VARIOUS LOCATIONS")	City	State	ZIP Code	Appl Nbr	Appl Status	Appl Status Description	Permit Status	NOX (lbs) 30 Day Avg.	CO (lbs) 30 Day Avg.	PM10 (lbs) 30 Day Avg.	SOX (lbs) 30 Day Avg.	UTM East	UTM North	Equip BCAT	BCAT Description	Inspector ID	Inspector Name	Inspector Phone	Appl Date	PC Issue Date	PO Issue Date
147705		EAGLE CRUSHER CO INC	VARIOUS LOCATIONS IN SCAQMD	DIAMOND BAR	CA	91765	455747	25	PERMIT TO CONSTRUCT GRANTED		0	0	5	0	0	0	107751	AGGREGATE PRODUCTN/CRUSHING (<5000 TPD)	DH04	DEREK K HOLLINSHEAD	9093962275	4/12/2006	5/10/2006	
147705		EAGLE CRUSHER CO INC	VARIOUS LOCATIONS IN SCAQMD	DIAMOND BAR	CA	91765	455748	25	PERMIT TO CONSTRUCT GRANTED		70	41	2	0	0	0	41902	ICE (>500 HP) N-EM PORT N-RENT DIESEL	DH04	DEREK K HOLLINSHEAD	9093962275	4/12/2006	5/10/2006	
147813	9999	ELSINORE VALLEY MUNICIPAL WATER DISTRICT	22656 LIGHTHOUSE DR	CANYON LAKE	CA	92587	456385	31	PERMIT TO OPERATE GRANTED	ACTIVE	1	0	0	0	0	0	43902	ICE (>500 HP) EM ELEC GEN DIESEL	WC01	WINNIE Y CHO	9093962547	4/27/2006	4/27/2006	4/27/2006

Hazardous Materials Handling

Hazardous Materials Handling

Offsite Consequences Analysis

WSQ-9. *Please provide an analysis of the off-site consequences of an accidental rupture of the aqueous ammonia storage tank.*

Response: Attachment HAZ-1 is a technical memorandum reporting the results of the offsite consequences analysis.

Attachment HAZ-1

Offsite Consequences Analysis

Off-Site Consequence Analysis Walnut Creek Energy Park (05-AFC-02)

PREPARED FOR: Doug Davy, AFC Project Manager
PREPARED BY: Ben Beattie, Stephen O'Kane
DATE: June 16, 2006

Walnut Creek Energy, LLC (WCE) a wholly-owned subsidiary of Edison Mission Energy (EME), proposes to construct, own, and operate an electrical generating plant in the City of Industry, Los Angeles County, California. The Walnut Creek Energy Park (WCEP) will be a natural gas-fired, simple-cycle electrical generating facility. The facility is designed to provide electrical power to support reliable supply and provide peaking power in Southern California.

WCEP will consist of five GE Energy LMS100 combustion turbine generators (CTG), a five-cell mechanical draft cooling tower, and associated support equipment. WCEP is required by both the Clean Air Act and the South Coast Air Quality Management District to install Best Available Control Technology to control emissions of criteria air pollutants from the combustion turbines. Nitrogen oxide (NO_x) emissions from the combustion turbines will be controlled using selective catalytic reduction (SCR). The SCR control system proposed for WCEP uses ammonia as the reduction reagent Aqueous ammonia (ammonium hydroxide at 19 percent nominal concentration by weight) will be vaporized and injected into the flue gas stream from the turbines, then passed through a catalyst bed. In the presence of the catalyst, the ammonia (NH₃) and NO_x react to form nitrogen (N₂) and water vapor (H₂O) thereby reducing the NO_x emissions.

The WCEP facility will store 19-percent aqueous ammonia solution in a single stationary 15,000 gallon aboveground storage tank. The tank will be surrounded by a 47-foot by 17-foot by 3-foot secondary containment structure capable of holding the full contents of the tank, plus rainwater. The secondary structure is located 110 feet (34 meters) from the nearest point on the property boundary.

Aqueous ammonia will be delivered to the plant by truck transport. The ammonia delivery truck unloading station will include a bermed and sloped pad surface. The bermed truck drainage pad will slope to a collection trough that will drain into the secondary containment structure of the ammonia tank.

The ammonia tank will be equipped with a pressure relief valve set at 25 pounds per square inch gauge (psig), a vapor equalization system, and a vacuum breaker system. The storage tank will be maintained at ambient temperature and atmospheric pressure.

The California Energy Commission requested an offsite consequence analysis (OCA) be conducted for the accidental release of aqueous ammonia at WCEP. The accidental release scenario involves the failure and complete discharge of the contents of the aqueous ammonia storage tank.

Analysis

An analysis of a tank failure and subsequent release of aqueous ammonia was prepared using a numerical dispersion model. The analysis assumed the complete failure of the storage tank, the immediate release of the contents of the tank and the formation of an evaporating pool of aqueous ammonia within the secondary containment structure. Evaporative emissions of ammonia would be subsequently released into the atmosphere. Meteorological conditions at the time of the release would control the evaporation rate, dispersion and transport of ammonia released to the atmosphere. For purposes of this analysis, the following meteorological data were used:

- U.S. Environmental Protection Agency (USEPA) default (worst case) meteorological data, supplemented by daily temperature data as defined by 19 CCR 2750.2.

The maximum temperature recorded near the WCEP in the past 3 years was 105°F or 313.7° Kelvin, measured at Montebello, California (<http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?camont>). Maximum temperatures combined with low wind speeds and stable atmospheric conditions would be expected to result in the highest ammonia concentrations at the furthest distance downwind of the release site.

Table 1 displays the meteorological data values used in the modeling analysis.

TABLE 1
Meteorological Input Parameters

Parameter	Worst Case Meteorological Data
Wind Speed feet/second	4.9
Stability Class	F
Relative Humidity, Percent	50
Ambient Temperature, Kelvin (°F)	313.7 (105)

One modeling run was conducted based on an evaporating pool release caused by the complete failure of a single tank, using the meteorological data presented in Table 1. Modeling was conducted using the SLAB numerical dispersion model. A complete description of the SLAB model is available in *User's Manual for SLAB: An Atmospheric Dispersion Model for Denser-Than-Air Releases*, D. E. Ermak, Lawrence Livermore National Laboratory, June 1990. The SLAB user manual contains a substance database, which includes chemical-specific data for ammonia. These data were used in modeling run without exception or modification.

Emissions of aqueous ammonia were calculated pursuant to the guidance given in *RMP Offsite Consequence Analysis Guidance*, EPA, April 1999 and using the "evaporation calculator" provided by the National Oceanic and Atmospheric Administration (<http://archive.orr.noaa.gov/cameo/evapcalc/evap.html>). Release rates for ammonia vapor from an evaporating 19-percent solution of aqueous ammonia were calculated assuming mass transfer of ammonia across the liquid surface occurs according to principles of heat transfer by natural convection. The ammonia release rate was calculated using the

evaporation calculator, meteorological data displayed in Table 1 and the dimensions of the secondary containment area.

An initial ammonia evaporation rate was calculated and assumed to occur for one hour after the initial release. For concentrated solutions, the initial evaporation rate is substantially higher than the rate averaged over time periods of a few minutes or more since the concentration of the solution immediately begins to decrease as evaporation begins.

For the release scenario, a release of the entire contents of the storage tank (15,000 gallons of 19-percent aqueous ammonia) was assumed to be the worst case scenario. The failure of the tank would cause the aqueous ammonia to leak into the containment area and the release of ammonia gas would result from evaporation.

Although the edge of the tank containment area is raised above ground level, the release heights used in the model were set at 0 m above ground level (AGL) to maintain the conservative nature of the analysis. Downwind concentrations of ammonia were calculated at heights of 0 and 5.25 feet above ground level. Reported distances to specified toxic endpoints are the maximum distances for concentrations at 0 and 5.25 feet above ground level. The California Office of Environmental Health Hazard Assessment (OEHHA) has designated 5.25 feet as the breathing zone height for individuals.

An alternative to the storage tank failure release scenario was also considered. The release of aqueous ammonia from a tank loading hose failure with a leak below the excess flow valves activation set-point and the subsequent impacts was considered. An alternative release analysis would normally be completed under typical or average meteorological conditions for the area. However, after review of the possible failure modes, it was determined that the impact of this leak would be captured by the complete tank failure as a worst-case for the hose failure.

Toxic Effects of Ammonia

With respect to the assessment of potential impacts associated with an accidental release of ammonia, four offsite "bench mark" exposure levels were evaluated, as follows: (1) the lowest concentration posing a risk of lethality, 2,000 ppm; (2) the Occupational Safety and Health Administration's (OSHA) Immediately Dangerous to Life and Health (IDLH) level of 300 ppm; (3) the Emergency Response Planning Guideline (ERPG) level of 150 ppm, which is the American Industrial Hygiene Association's (AIHA) updated ERPG-2 for ammonia; and (4) the level considered by the California Energy Commission (CEC) staff to be without serious adverse effects on the public for a one-time exposure of 75 ppm (*Preliminary Staff Assessment-Otay Mesa Generating Project, 99-AFC-5, May 2000*).

The odor threshold of ammonia is approximately 5 ppm, and minor irritation of the nose and throat will occur at 30 to 50 ppm. Concentrations greater than 140 ppm will cause detectable effects on lung function even for short-term exposures (0.5 to 2 hours). At higher concentrations of 700 to 1,700 ppm, ammonia gas will cause severe effects; death occurs at concentrations of 2,500 to 7,000 ppm.

The ERPG-2 value is based on a one-hour exposure or averaging time; therefore, the modeled distance to ERPG-2 concentrations are presented in terms of one-hour (or 60 minute) averaging time. The ERPG-2 is the maximum airborne concentration below which it

is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair an individual's ability to take protective action. OSHA's IDLH for ammonia is based on a 30-minute exposure or averaging time; therefore, the IDLH modeling concentrations at all offsite receptors will be given in terms of a 30-minute averaging time.

Modeling Results

Table 2 shows the modeled distance to the four benchmark criteria concentrations: lowest concentration posing a risk of lethality, (2,000 ppm), OSHA's IDLH (300 ppm), AIHA's ERPG-2 (150 ppm), and the CEC significance value (75 ppm).

TABLE 2
Distance to EPA/CalARP and CEC Toxic Endpoints

Scenario	Distance in Feet to 2,000 ppm	Distance in Feet to IDHL (300 ppm)	Distance in Feet to AIHA's ERPG-2 (150 ppm)	Distance in Feet to CEC Significance Value (75 ppm)
0 m AGL	45	49	51	53
1.6 m AGL	48	54	56	57

The model input file and the output files are available upon request

The results of the off-site consequence analysis for the worst case release scenario of aqueous ammonia at WCEP indicate that concentrations above the most stringent benchmark criteria (CEC's significance value of 75 ppm) would not extend off the project site (see Figure 1). In the event of the failure of the storage tank and the complete discharge of the maximum potential volume of aqueous ammonia, concentrations of ammonia gas in air at, and near ground level would not exceed 75 ppm at an offsite receptor.

Assessment of the Methodology Used

Numerous conservative assumptions were used in the above analysis of the tank failure. These include the following:

- Modeling & Meteorology
 - Worst case of a constant mass flow, at the highest possible initial evaporation rate for the modeled wind speed and temperature was used, whereas in reality the evaporation rate would decrease with time as the concentration in the solution decreases.
 - Worst case stability class was used, which almost exclusively occurs during nighttime hours, but the maximum ambient temperature of 105°F was used, which would occur during daylight hours.
 - Again worst-case meteorology corresponds to nighttime hours, whereas the worst-case release of a tank failure would most likely occur during daytime activities at the power plant. At night, activity at a power plant is typically minimal.

Risk Probability

Accidental releases of aqueous ammonia in industrial use situations are rare. Statistics compiled on the normalized accident rates for RMP chemicals for the years 1994-1999 from *Chemical Accident Risks in U.S. Industry-A Preliminary Analysis of Accident Risk Data from U.S. Hazardous Chemical Facilities*, J.C. Belke, Sept 2000, indicates that ammonia (all forms) averages 0.017 accidental releases per process per year, and 0.018 accidental releases per million pounds stored per year. Data derived from *The Center for Chemical Process Safety*, 1989, indicates the accidental release scenarios and probabilities for ammonia in general shown in Table 3.

TABLE 3
General Accidental Release Scenarios and Probabilities for Ammonia

Accident Scenario	Failure Probability
Onsite Truck Release	0.0000022
Loading Line Failure	0.005
Storage Tank Failure	0. 000095
Process Line Failure	0.00053
Evaporator Failure	0.00015

Conclusions

Several factors need to be considered when determining the potential risk from the use and storage of hazardous materials. These factors include the probability of occurrence, population densities near the project site, meteorological conditions, and the process design. Considering the results of this analysis, the probability of a catastrophic storage tank failure resulting in the modeled ammonia concentrations, and the probability of a tank failure occurring under low wind speeds, maximum potential air temperatures and F class atmospheric stability, the risk posed to the public from the storage of aqueous ammonia at the WCEP site is not significant.

As described above, numerous conservative assumptions have been made at each step in the analysis. This compounding of conservative assumptions has resulted in a significant overestimation of the probability of an ammonia release at the WCEP and the predicted distances to the benchmark criteria do not extend off the project site and pose no threat to public receptors. Therefore, it is concluded that the risk from exposure to aqueous ammonia due to the WCEP is less than significant.

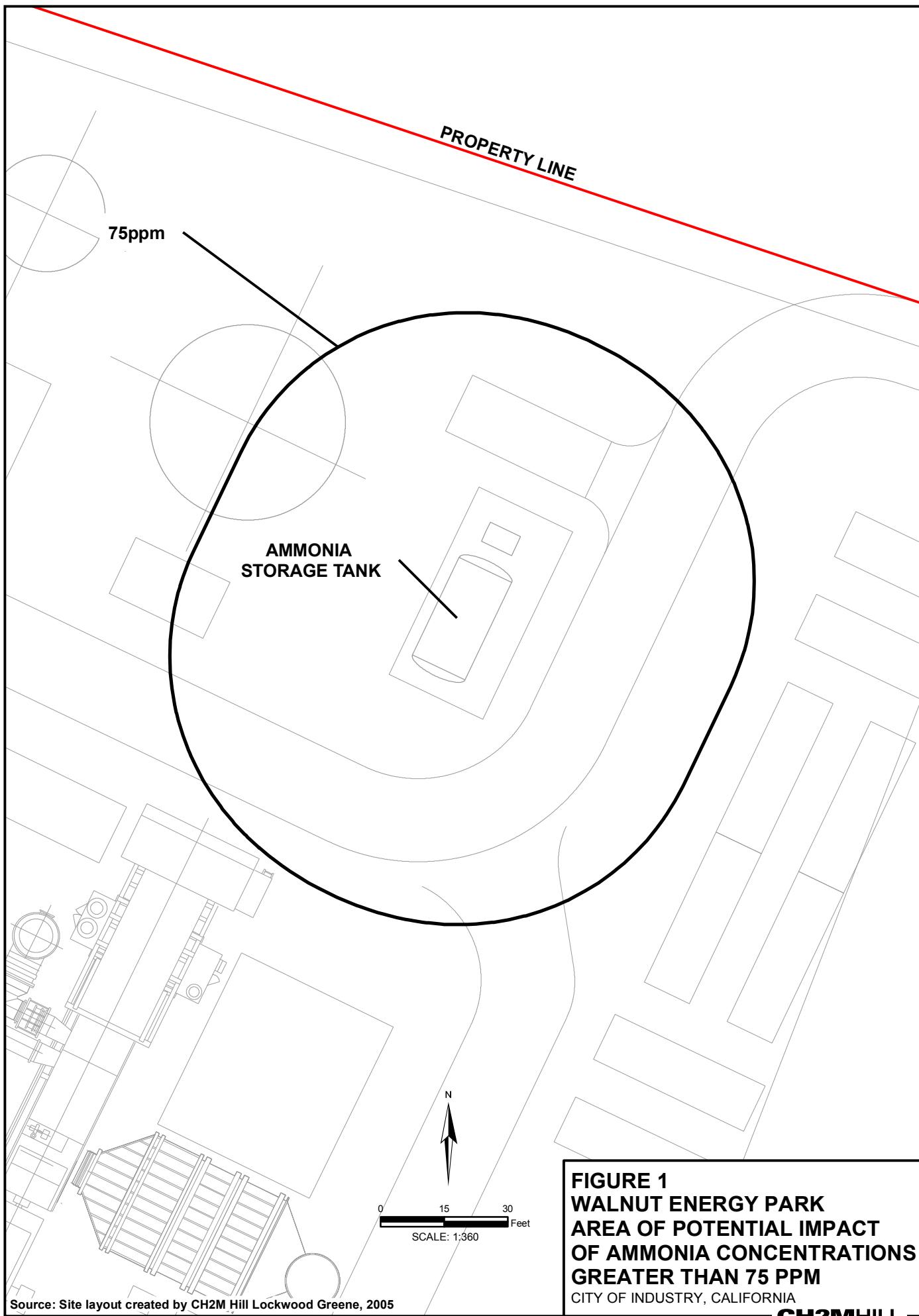


FIGURE 1
WALNUT ENERGY PARK
AREA OF POTENTIAL IMPACT
OF AMMONIA CONCENTRATIONS
GREATER THAN 75 PPM
CITY OF INDUSTRY, CALIFORNIA

CH2MHILL

Land Use

Land Use

Project Site Lease Option Agreement

DR100. Please provide a copy of the signed lease option agreement between EME and the City of Industry Urban Development Agency. The Applicant may redact any sensitive financial information contained in the lease option agreement.

Response: The lease option agreement will be included in a future submittal.

Laydown Area Lease Option Agreement

DR101. Please provide a copy of the signed lease agreement between the applicant and Logistics Terminals, Inc. The applicant may redact any sensitive financial information contained in the lease agreement.

Response: The lease option agreement will be included in a future submittal.

Visible Plume Modeling

Visible Plume Modeling

Visible Plume Modeling Results

DR77. *If the applicant performed a visible plume modeling analysis in support of the AFC Visual Resources conclusion, please provide:*

- a. *the modeling results;*
- b. *any meteorological data used in the analysis;*
- c. *a full discussion of all assumptions;*
- d. *the name and version of the model used; and*
- e. *all model input and output files.*

Response: Visible plume modeling analysis will be provided in a future submittal.

Cooling Tower Data

DR102. *Please confirm the cooling tower data provided in the supplemental data response, or provide corrections to this data as necessary.*

DR103. *Please explain the low air flow for this cooling tower and describe the technical differences between the cooling for this project and the cooling for combined-cycle projects that allow for the WCEP's higher cooling water temperatures and very low cooling tower air flows.*

DR104. *Please discuss whether the cooling tower would be redesigned to allow for higher air flow rates (around 15 kg/s/MW), or whether there are other design changes that would effectively reduce the frequency of visible plumes.*

Response: The Applicant has requested confirmation of the cooling tower input and airflow data from the turbine and cooling tower manufacturers and will provide revised input parameters to the Staff as necessary when the confirmation data is available.

Visual Resources

Visual Resources

Development Plans

DR90. *Please prepare and submit a set of development plans for our review that contain all of the components relative to Site Plans and Elevation Plans, as required by the City's Development Guidelines and Development Plan Application (paragraphs A and C) process.*

Response: The Development Plan Application preparation is underway and will be submitted to the Staff and City for review when final.

Landscape and Irrigation Plan

DR91. *Please provide a landscape and irrigation plan that contains all the components required by the City.*

Response: The landscape and irrigation plan preparation is underway and will be submitted to the Staff and City for review when final.